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FBI LABORATORY

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FBI Laboratory 2001 Report

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The FBI Laboratory 2001 Report
may also be viewed online at:
www.fbi.gov/hq/lab/labannual01.pdf

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Message from the FBI Laboratory Director

In recent years, because of the FBI's role in fighting al-Qaeda, the Laboratory's experience and sophistication in investigating terrorist bombing scenes have increased. In 1998, our ability to manage large-scale bombing scenes was honed when American embassies were attacked in Dar es Salaam, Tanzania, and Nairobi, Kenya. We searched bombing scenes at Khobar Towers in Saudi Arabia (1996) and the nearly destroyed USS Cole in Yemen (2000).

When planes crashed into the World Trade Center's Twin Towers, the Pentagon, and a Pennsylvania field on September 11, 2001, and later when anthrax was discovered in letters sent through the U.S. Postal Service, FBI Laboratory personnel were on the scene. Invariably, when peril threatens or takes the lives of American citizens around the world, the FBI Laboratory is called into action. Although no forensic laboratory can be the best-qualified to respond to all difficult or unprecedented crime scenes, the FBI Laboratory is unique in its ability to respond quickly to the worst-possible situations whenever and wherever they occur. The FBI's aircraft can quickly take Laboratory personnel and equipment into fast-breaking situations anywhere in the world to conduct crime scene operations.

On September 11, 2001, the Laboratory's Crisis Response Unit, Hazardous Materials Response Unit, and Bomb Data Center were immediately activated. Even before the Twin Towers collapsed, evidence response teams from FBI offices around the country were being dispatched to the crash sites. Fingerprint examiners from the Disaster Squad were sent to assist in identifying victims. Technical units from the Engineering Research Facility (ERF) at Quantico rebuilt the FBI's radio system in New York. Hundreds of radio units were deployed for crisis response and to support nationwide investigations.

Since then, nearly all Laboratory units have examined evidence from hundreds of submissions or supported the criminal investigations and prosecutions that are still unfolding. The DNA units helped identify victims from biological remains and the hijackers from their personal effects. The Questioned Documents Unit received more than 1,600 specimens, including burnt, water-damaged, and fragmented documents. During the first 30 days of the investigation, the Computer Analysis Response Team examined more than 35 terabytes of data from computers and Internet files. Laboratory employees were dispatched around the world to assist in the investigations.

Only days after the events of September 11th, another major case broke with anthrax-induced deaths at American Media International's headquarters in Palm Beach, Florida, and the

When planes crashed into the World Trade Center's Twin Towers, the Pentagon, and a Pennsylvania field on September 11, 2001, and later when anthrax was discovered in letters sent through the U.S. Postal Service, FBI Laboratory personnel were on the scene.

U.S. Postal Service's Brentwood mail facility in Washington, DC. The Senate's Hart Office Building in Washington, DC, and NBC News in New York City also were targeted. Throughout the crisis, the Laboratory worked closely with the Centers for Disease Control and Prevention in Atlanta and the U.S. Army's Institute of Infectious Diseases at Fort Detrick, Maryland.

During 2001, the Laboratory also supported the ongoing investigation of Ahmed Ressam's foiled attempt to bomb the Los Angeles International Airport during Millennium 2000 celebrations.

The magnitude and sophistication of such terrorist attacks have caused the FBI Laboratory's role and forensic mission to shift. In coming years, other forensic laboratories also may be required to alter their operational capabilities to better respond to terrorist acts.

In late 2000, the Laboratory examined the contents of a suspect duffel bag that contained documents, a cassette tape, computer diskettes, an envelope, and plastic wrapping. FBI Special Agent Robert P. Hanssen's fingerprints were identified on the plastic wrap, and his voice was on the cassette tape. Over 700 document specimens were subsequently examined for indented writing, handwriting, and other characteristics. Hanssen was arrested in February 2001 as a spy for the Soviet Union, and later Russia, when he left a package at a suburban Virginia drop site. The Laboratory matched a tape edge on the package with a roll of tape in his car. Hanssen's fingerprints were found on the package, and a piece of medical tape left on a tree as a signal matched a partial roll in Hanssen's possession.

Several other Laboratory programs provide technical assistance to federal, state, and local law enforcement agencies to increase crime fighting capabilities. The Combined DNA Index System (CODIS) continues to expand as more DNA laboratories participate. CODIS' success is growing rapidly as DNA evidence is used to link crime scenes and identify suspects from the national database of convicted offenders. In 2001, the National Missing Persons DNA Database was established to store DNA profiles of unknown missing persons, unidentified human remains, and reference samples from the relatives of missing persons. Also inaugurated in 2001 was the Virtual Academy, the Laboratory's Internet-based source of forensic training in cooperation with other organizations such as the California Criminalistics Institute, National Center for Forensic Science, and National Forensic Science Technology Center.

The events of September 11th caused postponement of the Laboratory's 2001 symposium for forensic laboratory directors until December, but plans are proceeding to hold the 2002 symposium in September.

Several construction projects are planned or underway that will significantly expand the Laboratory's capabilities and infrastructure. In 2002, approximately 650 employees from FBI Headquarters will relocate to a new facility at the FBI Academy, Quantico, Virginia. The 463,000 square-foot building will be the largest, most modern forensic laboratory in the world. In May 2002, construction will begin on a new facility for the Hazardous Devices School to be managed by the Laboratory's Bomb Data Center in cooperation with the U.S. Army at Redstone Arsenal in Huntsville, Alabama. In addition, Congress recently authorized the design and construction of a Technical Support Center to serve as a centralized resource to combat the illegal use of cybertechnology and encryption in terrorism and criminal cases. The new Center will expand ERF's complex of buildings at the FBI Academy.

Dwight E. Adams
Director FBI Laboratory
Federal Bureau of Investigation

FBI LABORATORY

The successful investigation and prosecution of crimes requires, in most cases, the collection, preservation, and forensic analysis of evidence. Forensic analysis of evidence is often crucial to demonstrations of guilt and/or innocence. The FBI seeks to enhance the Laboratory's full range of services including forensic examinations, investigative operations support, research and development, application of information technology, and training.

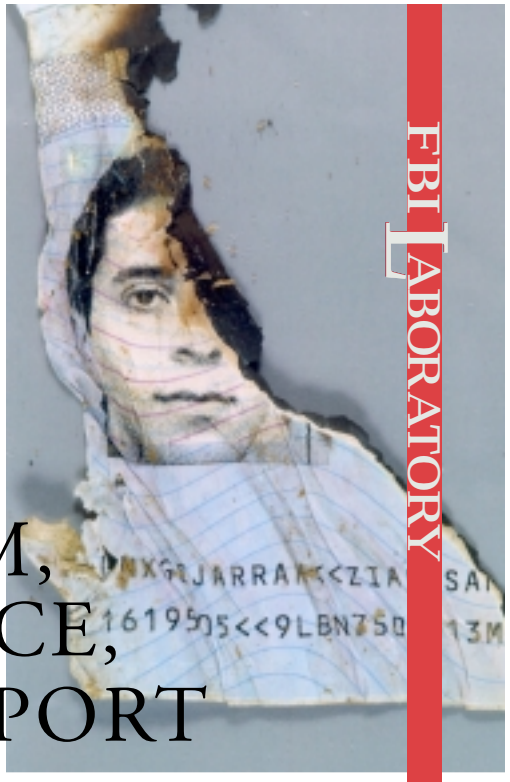
Laboratory Program Goals

- Provide forensic services to the FBI and other duly constituted law enforcement agencies
- Deploy effective communications, collection, and surveillance capabilities to support investigative and intelligence priorities
- Provide technical and forensic assistance through research, training, technology transfer, and access to information and forensic databases

Laboratory Strategic Objectives

To accomplish these goals, the FBI has established three strategic objectives that will provide a coordinated and comprehensive applied science and engineering capability to support FBI national priorities. These objectives are expected to:

- Fully exploit applied science and engineering capabilities to support FBI national priorities.
- Improve FBI applied science and engineering capabilities.
- Lead the application of applied science and engineering to resolving law enforcement problems.



■ Hijacker's Passport Found at Pennsylvania Crash Site

COUNTERTERRORISM, COUNTERINTELLIGENCE, & INVESTIGATIVE SUPPORT

SEPTEMBER 11, 2001

On September 11, 2001, four airplane crashes occurred within 90 minutes forever changing America. Although an exact number of victims may never be known, 19 terrorist hijackers killed more than 3,000 people. After leaving Boston's Logan Airport, American Airlines Flight 11 and United Airlines Flight 185 were hijacked and flown into the Twin Towers of the World Trade Center in New York City. Both towers collapsed shortly after impact, crushing thousands of people in the rubble. American Airlines Flight 77 took off from Dulles Airport in Virginia bound for Los Angeles and crashed into the Pentagon in Virginia. The fourth airplane, United Airlines Flight 93, left Newark, New Jersey, for San Francisco but crashed in Somerset County, Pennsylvania, killing all on board.

The Laboratory has a major role in this investigation, code named PENTTBOMB. Since the initial response at the three crime scenes, most Laboratory units have supported the investigation. Because of its experience managing major bombing crime scenes and handling large quantities of evidence, the Explosives Unit coordinated the identification, collection, and examination of evidence.

The following Laboratory units and sections assisted the FBI's Pittsburgh, New York, and Washington Field Offices at the crime scenes:

- Bomb Data Center personnel provided support for disposal of improvised explosive devices and coordinated deployment of special agent bomb technicians to support the evidence response teams.

- The Crisis Response Unit provided secure and constant voice, facsimile, and data communications between the crisis sites and FBI Headquarters by using existing telephone lines or satellite and radio frequency communications. Unit personnel operated as a fully remote FBI facility.

- Evidence response teams assisted in searching the crash sites, recovering human remains, collecting and preserving physical evidence, and establishing off-sites to search through rubble removed from the crash sites. Teams were dispatched to search other places associated with the investigation as well. Evidence Response Team Unit personnel coordinated the deployment of the teams and provided specialized equipment and supplies. Personnel assisted in operating temporary morgues. The teams were able to locate and collect numerous pieces of significant evidence.

- The Hazardous Materials Response Unit provided site-safety assessment at the crime scenes. Potential hazards included jet fuel, blood-borne pathogens, sewage, structural and confined-space hazards, and electrical and explosive atmospheres. Unit personnel provided liaison with local on-scene emergency medical services and supported the evidence response teams during crime scene searches.

- When the World Trade Center collapsed, the FBI New York Field Office's radio systems were partially disabled. The Engineering Research Facility's Technical Programs Section dispatched a team to New York City to restore connectivity. Teams also responded to the Pentagon and Pennsylvania sites with emergency communications equipment.

During the investigation's first 90 days, the Laboratory received more than 450 evidence submissions including approximately 1,200 unknown or questioned specimens, 2,680 known specimens, and 380 informational or nonevidentiary items. These specimens were photographed and subjected to thousands of examinations and intercomparisons, and the results provided field investigators with information, investigative leads, and evidentiary proof.

Between September 12 and November 30, 2001, the Questioned Documents Unit handled approximately 150 submissions including more than 1,600 specimens. Some evidence was badly damaged by moisture or fire and had to be stabilized prior to examination. Several documents were reconstructed from torn fragments. Documents were prepared for language translation and future handwriting comparisons. Specialized equipment was used to extract evidential information such as indented writing, deciphered numerals, and the origin of printed designs.

DNA analysis identified victims from the Pentagon and Pennsylvania crash sites. Several hijackers' DNA profiles were developed from items recovered at crash sites and from personal effects found in hotel rooms used by the men. DNA profiling demonstrated that two of the

■ Printed Logo Appearing on Arabic Language Document
■ Evidence Response Teams at the Pentagon

hijackers were closely related, such as father/son or brother/brother, which was consistent with other information.

Computer Analysis Response Team examiners from FBI Headquarters and field offices processed and examined more than 35 terabytes of data within the first 30 days. Computers and disks from the subjects were examined, as were Internet service providers, publically available computers, and a disk recovered from the Pennsylvania crash site.

The FBI Disaster Squad was deployed to the three crime scenes, and they assisted the New York Police Department Missing Persons Unit at the World Trade Center crime scene. Between November 12, 2001, and January 17, 2002, Latent Print Units received 223 submissions, including approximately 3,833 pieces of evidence upon which 126,632 comparisons have been conducted.

Forensic Audio, Video, and Image Analysis Unit personnel collaborated with personnel from the National Transportation Safety Board to try to recover the audio from cockpit voice recorders from American Airlines Flight 77 and United Airlines Flight 93. Flight 77's magnetic tape cockpit voice recorder was destroyed in the fire. The solid state cockpit voice recorder from Flight 93 was damaged in the crash; however, with assistance from the manufacturer, the data were recovered. The audio data were transcribed and translated. Unit personnel also worked with Federal Aviation Administration personnel to obtain air traffic control audio from the four flights. Forensic Audio, Video, and Image Analysis Unit personnel received other audio and video recordings (tapes and discs) from field offices and crash sites for restoration, duplication, enhancement, and comparison. Unit examiners also videotaped the Pentagon crash site crime scene.

Personnel from the Investigative and Prosecutive Graphic Design and Structural Design Units conducted Pentagon crash-site surveys which depicted victim and evidence locations, building damage, the path of the jet, and airline debris orientation. Two-dimensional and three-dimensional scale reconstructions will be used to clarify expert and eyewitness court testimonies.

Special Photographic Unit personnel received more than 150 photographic evidence submissions from Laboratory Units. The unit photographically enhanced personal identification photographs that were damaged by the crashes. Personnel also photographically enhanced obliterated and indented writings found at the crash sites. Aerial photographs of the World Trade Center, the Pentagon, and the Pennsylvania crash sites were taken. More than 170,000 photographs, which include 5,000 photographs of subjects and/or suspects, were taken and copies made for investigative personnel, prosecutors, conferences, briefings, and distribution to field offices and the news media.

ANTHRAX LETTERS

On October 4, 2001, Robert Stevens, an employee at *The Sun*, headquartered at American Media International in Palm Beach, Florida, was diagnosed with inhalation anthrax. His death the following day started a full-scale investigation by the Centers for Disease Control and Prevention (CDC), the FBI, and other agencies into the cause of the contamination and gave light to previously undiagnosed cutaneous and inhalation anthrax infections in six states and the District of Columbia. The outbreak killed five people and infected 18 others between September 18, when the first anthrax-laced letters postmarked near Trenton, New Jersey, were mailed, and November 21, when Ottilie Lundgren of Oxford, Connecticut, died of inhalation anthrax.

The investigation determined that anthrax infection was spread through the U.S. mail. The first anthrax-contaminated letters were mailed to NBC news anchor, Tom Brokaw, and to the *New York Post*. In early October, the second group of letters was sent to U.S. Senators Thomas A. Daschle and Patrick J. Leahy. All the letters were handwritten in childlike block letters tilting to the right and dated September 11, 2001.

The Laboratory's Hazardous Materials Response Unit and the field's Hazardous Materials Response Teams assisted in processing the crime scenes. Early in the investigation, personnel from the FBI's Hazardous Materials Response Unit and the Counterterrorism Division worked at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) at Fort Detrick, Maryland. They oversaw receiving, tracking, and reporting results for evidence that was collected by the field offices and transported to USAMRIID. They then coordinated the transfer of evidence from USAMRIID to the CDC for confirming positive-anthrax results and to private-sector laboratories for conducting specialized examinations. Procedures were developed to inactivate anthrax that might contaminate evidence. It was essential that decontamination procedures have minimal or no effect on other evidentiary materials and that they leave unchanged any biological markers such as DNA from saliva.

The Laboratory Response Network, established in 1999, is a partnership among the Laboratory's Hazardous Materials Response Unit, the CDC, and the Association of Public Health Laboratories. The Laboratory Response Network is made up of more than 90 federal, state, and local laboratories including the U.S. Department of Defense Armed Forces Institute of Pathology, the Naval Medical Research Center, and USAMRIID. This nationwide system analyzes substances suspected as possible biological threat agents. It played an essential role in collecting and investigating anthrax-contaminated mail.

A questioned document examiner analyzed handwriting and photocopy specimens, and Chemistry Unit personnel conducted ink analysis examinations. The letters and envelopes were searched for indented writing and watermarks and were sampled using a scent transfer unit. The text of the letters was searched in the anonymous letter database to determine if it matched specimens from other cases. The U.S. Secret Service analyzed the letters using the Forensic Information System for Handwriting, and the U.S. Postal Inspection Service provided information regarding postal indicia. The envelopes and letters were also examined for latent fingerprints, but no prints of value were detected. Trace evidence examiners recovered fibers from the four envelopes and letters and preserved the fibers on glass microscope slides. No fibers in common were detected among this evidence. Special Photographic Unit personnel photographed the anthrax-infected letters and envelopes. The unit produced more than 500 photographs for investigative purposes and distribution to the news media.

On November 17, 2001, a suspicious letter addressed to Senator Leahy was discovered. To safely preserve as much evidence as possible, Laboratory personnel wrote protocols to guide opening the letter, removing spores, and testing for anthrax. FBI Laboratory and Washington Field Office personnel also designed and implemented new procedures to screen future incoming mail suspected of anthrax contamination.

TERRORIST ATTEMPT THWARTED

Ahmed Ressam was arrested on December 14, 1999, in Port Angeles, Washington. Ressam, a 34-year-old Algerian, was attempting to enter the United States with components used to manufacture improvised explosives devices. The components concealed in the trunk of his vehicle included three types of high explosives (HMTD, RDX, and EGDN), four timers, and 120 pounds of urea. Subsequently, Ressam admitted that he planned to bomb Los Angeles International Airport on the eve of the Millennium 2000 celebrations.

In 1998, Ressam had received training in weaponry, rocket launchers, explosives, urban warfare, and assassinations in Osama bin Laden's terrorist camps in Afghanistan. After his training, he returned to Montreal, Canada, to participate in a GIA (Armed Islamic Group) terrorist cell. The GIA cell members specialized in bank and credit card fraud in Boston, New York, and Canada. The proceeds of this illegal operation financed the planned GIA attack on Los Angeles International Airport, authorized by Osama bin Laden.

Although Ressam resided in Montreal, he manufactured the explosives and timing devices in a

Vancouver motel room. As a result, the physical evidence seized in Canada was taken to two different Royal Canadian Mounted Police (RCMP) laboratories for analysis. Forensic scientists from both the RCMP and the FBI examined the evidence in this case. An FBI Laboratory Explosives Unit examiner coordinated the examinations of the items seized from the trunk of Ressam's rental vehicle. In addition, the examiner identified pertinent items recovered in Canada and obtained them for comparison with the items seized in Port Angeles. The RCMP Laboratory identified the presence of RDX and developed a DNA profile on a pair of pants and shoes recovered in Ressam's apartment. They also observed several holes in the pants which were consistent with originating from an acid spill. With this information, the FBI Seattle Field Office examined Ressam's legs and discovered a large burn. At trial, a doctor specializing in burns testified that the burn on Ressam's leg was consistent with an acid burn.

■ Ahmed Ressam

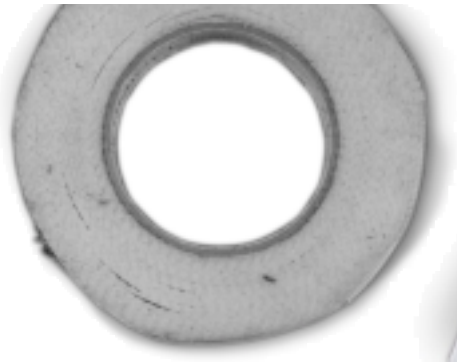
In the FBI Laboratory, a piece of hair was observed on a piece of clear tape inside one of the four time delay fuzing systems. The questioned hair was examined in the Trace Evidence Unit and determined to exhibit the same microscopic characteristics as hairs originating from Ahmed Ressam. As a result of the microscopic match, mitochondrial DNA sequences were obtained from both the questioned hair removed from a timing device and the known blood sample from Ahmed Ressam. The analysis could not exclude Ahmed Ressam as the source of the questioned hair from the improvised timing device.

Latent prints developed on the four timing devices and a map of Los Angeles showing three airports circled were associated with Ahmed Ressam. A date book, from which the FBI developed 13 of Mr. Ressam's fingerprints, included the addresses of two bin Laden collaborators. It also contained the addresses of the firms that Ressam used to obtain the electronic components and precursor chemicals for the manufacturing of the explosives.

Additionally, credit card purchases at several electronics shops in Montreal, Canada, were discovered. An Explosives Unit examiner traveled to Canada and purchased the same items, demonstrating to the jury that Ressam could have purchased electronic components that were consistent with the components used in the construction of the time delay fuzing systems recovered in the trunk of the rental vehicle.

After reviewing the items recovered in Montreal and Vancouver, the Explosives Unit examiner obtained several rolls of tape and a small piece of wire insulation for comparison. Subsequently, a forensic chemist determined that the packaging tape and clear tape recovered in Ressam's Montreal apartment were consistent in physical characteristics and chemical composition to those removed from the time delay fuzing systems. Accordingly, the pieces of tape removed from the four time delay fuzing systems could have originated from the roll of packaging tape and clear tape recovered in Ressam's apartment. In addition, a small piece of wire insulation was recovered from the Vancouver motel room. The chemist determined that it was consistent in physical characteristics and chemical composition to the wires used in the time delay fuzing systems.

Ahmed Ressam was tried and convicted in federal court of Conspiring to Commit an Act of International Terrorism and eight related charges. Ressam is scheduled to be sentenced in 2003.



ROBERT P. HANSSEN, SOVIET-RUSSIAN SPY

In the latter part of 2000, the Laboratory was given a suspect bag, the contents of which would help unravel one of the most infamous espionage cases in the history of the United States. Inside the bag were several packages of documents, a tape recording, some computer diskettes, and an envelope wrapped in plastic. The contents of the bag and the development of a thumbprint on the plastic wrapping that matched Hanssen's known thumprint, would tentatively identify Robert P. Hanssen, at the time an FBI counterintelligence special agent, as a long-term spy for the Soviet and Russian intelligence services.

Covert surveillance that included photography, court-authorized searches, forensic computer analysis, and other sensitive techniques revealed that Hanssen had routinely accessed FBI records and clandestinely provided those records and other classified information to Soviet and Russian intelligence officers. He had been using a variety of sophisticated means for communication, encryption, and dead drops.

Shortly after the Laboratory received the suspect bag, a special agent from the Washington Field Office delivered the tape to the Forensic Audio, Video, and Image Analysis Unit and requested that the audio be enhanced. An examiner suggested that the foreign-speaking voice be edited out of the recording, leaving only the voice of interest. Hanssen's voice was tentatively identified on the enhanced and edited tape.

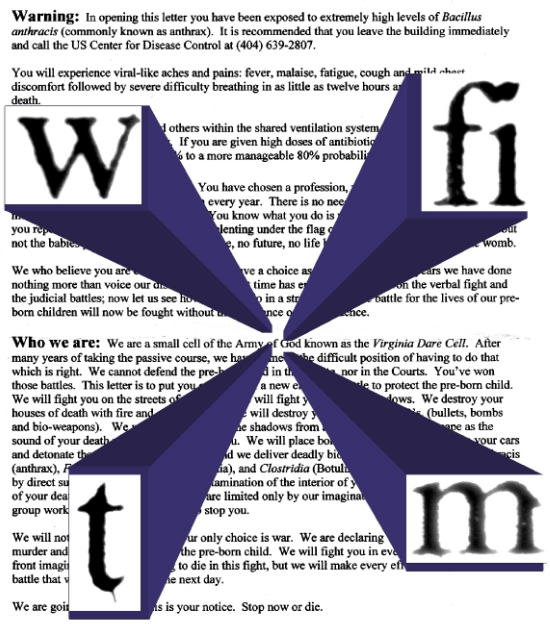
Questioned Documents Unit personnel examined the majority of the submitted 700 questioned specimens for indented writing, handwriting, and other unusual characteristics. A subsequent handwriting comparison conducted

between Hanssen's known samples and several questioned specimens revealed common characteristics. Some of the documents, however, were poor photocopies, and some of the written entries were too limited for positive conclusions. Special Photographic Unit personnel provided forensic photographic support to document examiners.

On February 12, 2001, a surveillance team in Virginia recovered a plastic-wrapped package. Laboratory personnel opened it, then examined and photographed $50,000 in $100 bills.

Hanssen was arrested on February 18, 2001, after placing a plastic-wrapped package at a drop site in Virginia. The Laboratory found that latent fingerprints on the package matched Hanssen's known fingerprints, and that the outer end of the plastic tape on the package matched tape remaining on a partial roll found in Hanssen's car. A piece of medical tape was found at a signaling location in Virginia. Purple synthetic fibers on that tape matched fibers recovered on the partial roll dropped by Hanssen when he was arrested.

Hanssen pleaded guilty to 15 espionage-related charges on July 6, 2001. He admitted that he sold the Soviets and Russians thousands of pages of national security secrets from the FBI and other government agencies, including details of intelligence operations, military and nuclear defense strategies, and the names of double agents, two of whom were executed in Moscow, in exchange for $1.4 million in cash, diamonds, and foreign bank deposits. He had begun spying in 1979, with two inactive periods before his arrest in February 2001. In the plea bargain, the government agreed to a life sentence with no chance of parole and will not seek the death penalty if Hanssen provides a full account of his spying.



■ Printing characteristics observed on the letters received at reproductive health clinics and on the letter recovered from Neal Horsley indicate the letters originated from a common source.

ABORTION CLINIC ANTHRAX-HOAX LETTERS

Clayton Lee Waagner, a 45-year-old fugitive on the FBI's Ten Most Wanted Fugitives List and self-described "anti-abortion warrior," was re-arrested December 5, 2001, near Cincinnati, Ohio. Back in February 2001, while awaiting sentencing for violating federal firearms laws in 1999, Mr. Waagner escaped from an Illinois jail and started a ten-month crime spree that included bank robberies and carjackings. He is also suspected of, and has claimed responsibility for, sending more than 500 anthrax threat letters.

In October and November 2001, two waves of threat letters signed by the Army of God and claiming to contain anthrax were sent to abortion clinics and women's health centers. The first wave was sent through the U.S. Postal Service; the second wave was sent by Federal Express. To date, the Laboratory has received 206 of these letters. Chemistry Unit personnel examined the powders. Some powders were flour, others were chalk dust. All recovered letters tested negative for anthrax.

Clayton Lee Waagner's fingerprints were found on letters recovered from Neal Horsley, who had received them from Waagner during a visit when he claimed responsibility for all the threat letters. Waagner's fingerprints were also identified on a Federal Express receipt.

Questioned Documents Unit personnel examined letters sent from the first wave. These letters were compared to a letter recovered from Neal Horsley. All these letters originated from a common source. The envelopes were also examined and were determined to have been prepared using four-color ink jet printing.

SIXTEENTH STREET BAPTIST CHURCH

On September 15, 1963, a bomb exploded under a stairwell outside of the African-American Sixteenth Street Baptist Church in Birmingham, Alabama. Four young girls ranging in age from 11 to 14 years were killed. Numerous injuries were sustained by other church members. A massive investigation was undertaken involving interviews with members of the church and known hate groups. No arrests were made, and after five years the investigation was closed.

In 1976, the investigation was reopened by the Attorney General for the State of Alabama and culminated in the conviction of Robert E. Chambliss, a longtime member of the Ku Klux Klan (KKK) in Alabama. Chambliss received a life sentence for his role in the bombing and died in prison in 1985.

In 1995, the special agent in charge of the FBI's Birmingham Field Office directed that the case be reopened.

After an extensive investigation, Bobby Frank Cherry and Thomas Edwin Blanton, Jr., onetime members of the KKK and associates of Chambliss, were indicted by a Jefferson County Alabama Grand Jury on four counts of murder and four counts of universal malice.

On April 23, 2001, Blanton was tried for participating in the bombing. An Explosives Unit examiner and a retired Laboratory examiner, who participated in processing the original crime scene, testified that the explosion was caused by a bomb planted under the stairs of the church. Blanton was convicted on May 1, 2001, and sentenced to life in prison. Cherry is scheduled for trial.

ASSISTANCE TO LAW ENFORCEMENT

COMBINED DNA INDEX SYSTEM AND NATIONAL DNA INDEX SYSTEM

The Laboratory's Combined DNA Index System (CODIS) blends forensic science and computer technology into an effective tool for linking violent crimes. It enables federal, state, and local forensic laboratories to exchange and compare DNA profiles electronically, thereby linking serial violent crimes to each other and to known sex offenders.

The National DNA Index System (NDIS) is the highest level in the CODIS hierarchy and enables participating laboratories in CODIS to exchange and compare DNA profiles nationally. There are 39 states, plus the U.S. Army and FBI Laboratories, participating in NDIS.

CODIS generates investigative leads in crimes where biological evidence is recovered from the crime scene using two indexes: the forensic index which contains DNA profiles from crime scene evidence, and the convicted offender index which contains DNA profiles of individuals convicted of felony sex offenses and other violent crimes.

An index for National Missing Persons DNA Database's data has been added to CODIS allowing federal, state, and local law enforcement laboratories to assist in the identification of missing persons and recovered human remains.

ACCOMPLISHMENTS as of JANUARY 2002

Convicted Offender Samples*	
Collected	1,577,751
Analyzed	624,172
Cases*	
Received	36,671
Analyzed	38,063
Forensic Hits	968
Offender Hits	2003
Number of CODIS Laboratories	149
Number of NDIS Laboratories	118

* 2000 CODIS Survey and 2001 Laboratory Survey Data

SUCCESS STORIES

On May 16, 2001, David Starkey was arrested for attempted abduction after the Ohio CODIS database linked DNA from the attempted abduction crime scene to Starkey's offender profile in the database from a prior burglary conviction. Starkey allegedly tried to abduct a woman at a shopping mall in Strongsville, Ohio, on October 21, 2000. As the woman was getting into her car to drive home, Starkey pushed her in and got on top of her. Another shopper saw what was happening, grabbed the assailant, and pulled him out of the car. Although he fled, the suspect left behind a cigarette filter. The Cuyahoga County Coroner's Office extracted DNA from the filter and developed a DNA profile which was then searched in the Ohio state DNA database. The database search found a match with a DNA profile belonging to Starkey.

In February 2001, Alvin Avon Braziel, Jr., while serving time for the 1997 sexual assault of a child, was charged with capital murder and aggravated sexual assault in a 1993 case. The Texas Department of Public Safety's DNA database had linked Braziel's DNA from the 1997 case to the DNA profile from the previously unsolved 1993 shooting death of 27-year-old Douglas White and rape of his 24-year-old wife, Lori. According to detectives, the armed assailant approached the victims on the campus of Eastfield Community College, forced the couple to lie on the ground, shot Douglas in the back and the head, and then raped his wife. Over the past seven years, police have investigated more than 200 leads and had 40 potential suspects submit to blood testing. Even the show *America's Most Wanted* aired the case without results. Finally, the Texas CODIS database solved these brutal crimes.

FEDERAL CONVICTED OFFENDER PROGRAM

The *DNA Identification Act of 1994* authorized the FBI to establish a National DNA Index System, but it did not authorize the collection of DNA samples from federal offenders. Enactment of the *DNA Analysis Backlog Elimination Act of 2000* closed this final legislative loophole by authorizing collection of DNA samples from federal offenders and those who commit qualifying crimes in the District of Columbia, the military, and on government reservations. Last October, the *USA Patriot Act of 2001* was enacted in response to the events of September 11, 2001. The legislation expanded the list of offenses covered by the Federal Convicted Offender program to include acts of terrorism and all crimes of violence. This is expected to expand the program to approximately 50,000 samples, with an estimated 10,000 new offenders annually.

The Federal Convicted Offender program is responsible for developing and registering DNA profiles from individuals convicted of qualifying offenses. Liquid blood samples are processed using short tandem repeat analysis. DNA profiles are then entered into the National DNA Index System of CODIS. The registered samples are regularly searched against forensic samples submitted by the FBI and other law enforcement agencies to identify suspects in open investigations.

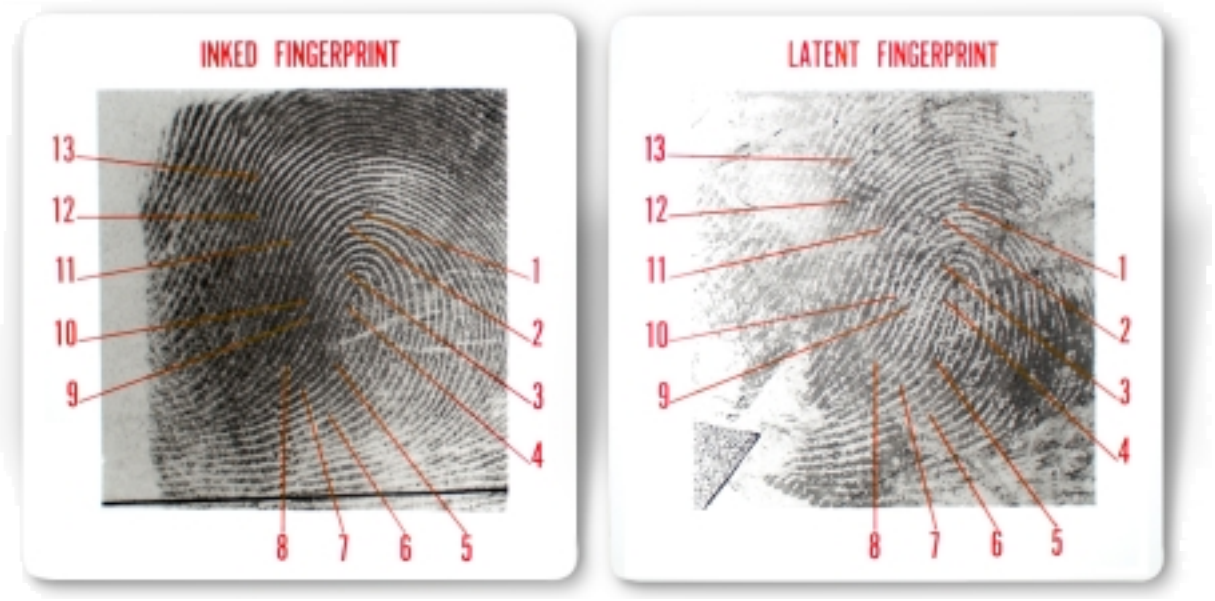
The program has distributed over 17,280 kits containing everything necessary to collect blood samples from qualifying offenders.

NATIONAL MISSING PERSONS DNA DATABASE

On May 4, 2001, the National Missing Persons DNA Database, a program for identifying missing and unidentified persons, was inaugurated. The database stores DNA profiles of discovered missing persons of unknown identity, unidentified human remains, and reference samples of relatives of missing persons. The profiles are determined by mitochondrial DNA and, when feasible, nuclear DNA analysis. This database has been added to CODIS allowing investigators to identify missing persons on a national level.

There are two components of the National Missing Persons DNA Database. One component, the Unidentified Human Remains Index, includes a database of DNA profiles from the remains of individuals that cannot be identified by fingerprint, dental, medical, or anthropological examinations, and of individuals who are living but are unidentifiable using typical investigative methods. The other component, the Relatives of Missing Persons Index, includes a database of DNA profiles generated from the relatives of known missing individuals. These profiles can be compared to DNA profiles from unidentified remains in an attempt to make an identification.

In the future, all samples relating to missing persons will be referenced in the National Crime Information Center so that investigators will know whether or not a DNA profile exists for a missing persons case.



INTEGRATED AUTOMATED FINGERPRINT IDENTIFICATION SYSTEM

The Integrated Automated Fingerprint Identification System (IAFIS) provides a national repository of criminals' fingerprints and maintains a criminal record for each person arrested. The IAFIS criminal master file contains more than 42 million criminals' 10-print fingerprint records.

Since IAFIS began in 1997, the Latent Print Units have positively identified 836 latent fingerprints with 675 persons in 454 criminal investigations. IAFIS-aided identifications have solved cases in which all other investigative leads had been exhausted, including closed and cold cases. In some cases, IAFIS-aided latent print identifications have provided additional evidence, expanded the scope of investigations, or led to new cases being opened.

SUCCESS STORY

On September 12, 1976, a 77-year-old white female was raped and beaten to death in her home. At the time of the initial investigation, fingerprint examiners from the New Orleans Police Department (NOPD) developed one latent fingerprint on a piece of glass and lifted seven other prints. They manually compared the latents against the New Orleans criminal fingerprint file without success. In 1979, the fingerprints were sent to the FBI for entry into an early automated search system, but no identifications were made.

In February 2001, NOPD's Cold Case Unit retrieved the fingerprints from their archive and conducted state and local IAFIS searches. Again, no identifications were made. The NOPD submitted the fingerprints to the FBI Latent Print Units requesting IAFIS searches. A latent print examiner then conducted IAFIS searches of two latent fingerprints. One of the searches identified a suspect. Seven more identifications were done manually. NOPD requested a copy of the report to obtain an arrest warrant. On November 2, 2001, the suspect was arrested and confessed. He had been released from jail on October 2, 2001. NOPD is now investigating three additional rapes/homicides that fit his modus operandi.

NATIONAL INTEGRATED BALLISTICS IDENTIFICATION NETWORK

The FBI and the Bureau of Alcohol, Tobacco and Firearms (ATF) have merged their ballistics imaging technology programs into a single system, the National Integrated Ballistics Identification Network (NIBIN). The FBI and ATF began installing the NIBIN ballistics system in 2001. The conversion of all current FBI and ATF sites should be completed by the end of 2003. The FBI will maintain its DRUGFIRE systems until they are phased out by the new system. Nationally, NIBIN has already made over 7,500 hits. By using the enhanced system, the agencies expect to increase the number of hits while decreasing the cost per hit.

SUCCESS STORY

On June 2, 2000, a male security guard was murdered. Then during a robbery, two male store clerks were murdered. Firearms evidence was recovered from both scenes and submitted for examination. The .40 Smith & Wesson-caliber bullets and cartridge cases were entered into NIBIN. Both scenes were linked indicating use of the same gun. These cases were also linked with an aggravated robbery that occurred on May 20, 2000. Further investigation linked an aggravated robbery that occurred on February 11, 2000, when a wallet was stolen and a credit card used.

NIBIN's local crime data was searched for recently stolen .40 Smith & Wesson pistols. The legal owner of one stolen pistol submitted a fired cartridge case. A hit in NIBIN identified the make, model, and serial number of the murder weapon. During questioning, a third store clerk, the one who had processed the stolen credit card transaction, revealed that he knew the person who had used the credit card. The clerk's information allowed warrants to be issued on June 9, 2000, leading to arrests and convictions. One robber confessed and turned state's evidence; the other was convicted of capital murder. On June 4, 2001, both were sentenced; the murderer was sentenced to death.

COMMUNICATIONS ASSISTANCE FOR LAW ENFORCEMENT ACT

The *Communications Assistance for Law Enforcement Act* (*CALEA*) seeks to ensure that telecommunications carriers have the necessary technical capability to facilitate lawfully authorized electronic surveillance.

The Laboratory's *CALEA* Implementation Section fulfills the FBI's mandated *CALEA* responsibilities by ensuring the telecommunications industry's compliance with the *CALEA*. During 2001, the Section completed two major initiatives. First, it finalized its nationwide right-to-use software license agreements with targeted major manufacturers of telecommunications equipment. Right-to-use software licenses allow telecommunications carriers to receive *CALEA*-compliant software at no charge on certain high-priority switching platforms. Second, it concluded the first phase of flexible deployment which can minimize costs and operational impact on carriers. The Section can support carriers' deferred deployment of software solutions in accordance with their normal business cycles, when it does not jeopardize public safety or national security. The second phase of flexible deployment, currently underway, applies to packet-mode switching technology.

FORENSIC SCIENCE TRAINING

The Laboratory provides training to FBI, national, and international forensic scientists and law enforcement personnel. Training ranges from basic crime scene processing to specialized forensic science laboratory courses, some of which are not available anywhere else. During 2001, the Laboratory provided training to more than 4,300 students.

TRAINING	SESSIONS	STUDENTS
National Academy Forensic Training	4	1,052
FBI New Agent Training	8	261
Specialized Forensic Science Training	27	527
Computer Analysis Response Training	2	36
Evidence Response Team Training	20	460
Hazardous Devices Schools	56	848
Scientific Working Group Meetings	13	411
Seminars and Conferences	5	294
Forensic Laboratory Symposium	1	242

■ Virtual Academy Campus

Virtual Academy

In 2001, after nearly a year's planning, the Training Unit established the Virtual Academy which is designed to provide a single, comprehensive, web-based learning solution as a means for acquiring the essential knowledge, skills, and competencies necessary to support the forensic science community. Open-agency registration began in January 2002.

The Virtual Academy provides the infrastructure for Training Partners. The Laboratory will join with other training entities (e.g., California Criminalistics Institute, National Center for Forensic Science, National Forensic Science Technology Center, Illinois State Police Forensic Laboratory) to expand and improve training opportunities for the forensic community. Collaborations are valuable because they provide broader perspectives and help to standardize training.

Training Partners will work together under the guidance of the Technical Working Group for Educational Development to:

1. Develop standard curriculum guidelines for classroom and self-paced continuing professional development courses requiring:
   - defined, job-related instructional objectives
   - pre-assessments to identify current knowledge/competencies
   - content that supports instructional objectives
   - post-assessments with defined pass/fail parameters
2. Develop and implement an instructor-approval process
3. Develop a standard tool for course/instructor evaluation
4. Establish a course review process to ensure that:
   - curriculum guidelines are followed
   - content is based on valid and reliable principles generally accepted by the forensic science community
5. Develop course/instructor training materials for use by the Training Partners
6. Use self-paced courses as prerequisites for classroom training, where appropriate
7. Offer an integrated course catalog, searchable by keyword or topic

Additional information on the Virtual Academy and registration forms may be found in *Forensic Science Communications (FSC)*, a quarterly journal published by FBI Laboratory personnel. *FSC* is online at www.fbi.gov/hq/lab/fsc/current/index.htm

BUILDING ON SUCCESS

LABORATORY

The Laboratory is scheduled to move from FBI Headquarters in Washington, DC, to a new facility on the campus of the FBI Academy in Quantico, Virginia, during the summer of 2002. Nearly 650 employees from the forensic examination units will be relocated.

The Laboratory's state-of-the-art design reveals five floors for specialized laboratories and offices, a 900-space parking garage, and a stand-alone central utilities plant. The facility will be a model for security and evidence control with specified paths for the acceptance, circulation, and return of evidence. Laboratory areas will be separated from offices and public areas to avoid evidence contamination and provide examination areas free of distractions. Access to the laboratories will be controlled with biovestibules to provide storage and serve as airlocks between laboratories and offices. The building was designed to limit exposure to biohazardous material and curtail transmittance of airborne pathogens. Its modular configuration allows for physical growth and internal reorganization.

HAZARDOUS DEVICES SCHOOL

The Hazardous Devices School, located at the Redstone Arsenal in Huntsville, Alabama, was created in 1971. It is funded by the FBI and operated under contract by the U.S. Department of the Army. This school provides basic training for all public safety bomb technicians in the United States and offers the only training recognized by the National Bomb Squad Commander's Advisory Board, which sets certification standards for bomb technicians and accreditation standards for bomb squads. This school provides state-of-the-art training in all aspects of public safety bomb squad response, including dangerous explosives and hazardous devices that contain chemical, biological, and radiological features.

Construction is planned to begin on a new facility at the Redstone Arsenal in May 2002, with completion scheduled for October 2003. The school will include four administrative and classroom buildings and 14 villages and practical-problem areas to train public safety personnel.

TECHNICAL SUPPORT CENTER

In response to the increased use of cybertechnology and encryption in terrorism and criminal cases, the U.S. Department of Justice and the FBI proposed a Technical Support Center to serve as a centralized resource for federal, state, and local law enforcement. Early in 2002, Congress appropriated $32.5 million to construct the Technical Support Center next to the Laboratory's Engineering Research Facility at the FBI Academy, Quantico, Virginia. It is currently in the design phase and is expected to be completed in 2007. The Center will have more than 100,000 square feet for electronics laboratories capable of developing advanced electronic surveillance, improving computer forensics, and supporting cybercrime investigations.

RESEARCH & DEVELOPMENT

The Laboratory provides technical leadership for state and local law enforcement agencies as well as the FBI as it develops and validates new forensic technologies and techniques with both internal and contracted research.

SUPERCRITICAL FLUID EXTRACTION

The Hazardous Materials Response Unit is supporting the development of a method for supercritical fluid extraction at the Pacific Northwest National Laboratory (PNNL), Richland, Washington. This technique uses pressurized (supercritical) carbon dioxide to extract chemicals from complex materials such as soil or clothing. The target application for supercritical fluid extraction is extraction of hazardous compounds and related substances from forensic samples to allow preparation for instrumental analysis. It will be helpful in field applications because, unlike traditional extraction methods, it is fast and produces little hazardous waste.

PNNL completed studies showing that supercritical fluid extraction is generally effective for a wide variety of hazardous chemicals, including chemical warfare agents, toxic industrial/agricultural chemicals, and explosives. Those studies used various simulated forensic matrices including soil, vegetation, construction materials, and fabrics. PNNL also designed and constructed a one-person-portable supercritical fluid extraction instrument. This instrument, now in final testing, will be delivered to the Laboratory in 2002.

■ Portable Supercritical Fluid Extractor

LOW THERMAL MASS GAS CHROMATOGRAPH

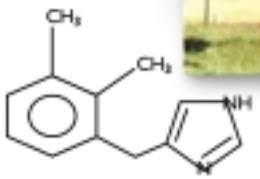
The Hazardous Materials Response Unit and Evidence Response Teams require rapid and reliable chemical analyses in the field. Gas chromatography (GC) coupled with mass spectrometry (MS) is a mature and proven analytical technique for the identification of unknown substances present even in very low concentrations. Until recently, GC/MS instruments were large, heavy, and required high power to operate, confining the technique to the laboratory.

The new RVM LTM-GC (RVM Scientific, Incorporated, Santa Barbara, California) delivers the same quality results as the bulky, power-hungry laboratory gas chromatograph but is approximately 100 times smaller and runs on approximately five percent of the power. The Forensic Science Research Unit's evaluation of the LTM-GC in 2001 focused on identifying narcotics, fuels, and chemical warfare simulants. To date, the LTM-GC has performed as well as a laboratory GC/MS in the detection of these substances and allows the gas chromatograph to ramp temperatures much faster, making the analysis time for any given sample potentially much shorter.

TOXICOLOGICAL METHOD DEVELOPMENT FOR A VETERINARY DRUG IN HUMAN BIOSPECIMENS

The Chemistry Unit required a validated protocol for detecting and identifying detomidine, a veterinary drug, in human biospecimens. The drug is not available through pharmacies, and its metabolites in humans may be different than in animals. No other known forensic analytical testing procedure has been applied to detomidine and its metabolites in humans.

Forensic Science Research Unit personnel developed and tested a method for identifying and quantitating detomidine from human blood. Identification was made by examining the spectrum of a chromatographic peak eluting at the same retention time as a detomidine standard. Method testing was performed on human blood samples extracted on four separate days. These tests included dynamic range and reproducibility measurements. As part of the analysis, chemical interference and recovery issues were addressed. These validation tests established that the developed method is robust, sensitive, and selective for the identification and quantitation of detomidine in human biospecimens.



Detomidine
$C_{12}H_{14}N_2$
M.W. 186

ACOUSTO-OPTICALLY TUNED FILTER FIELD-PORTABLE RAMAN SPECTROMETER (RAMiTS)

Raman spectroscopy is a novel analytical technique that has the potential to characterize potentially hazardous materials on-site without requiring direct contact by personnel. This project was designed to evaluate a new portable battery-operated Raman spectrometer system that is small, relatively

■ Portable Raman Spectrometer

lightweight, and has low power requirements. Feedback was provided on design and instrument capability to Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee, as part of their development of the RAMiTS prototype.

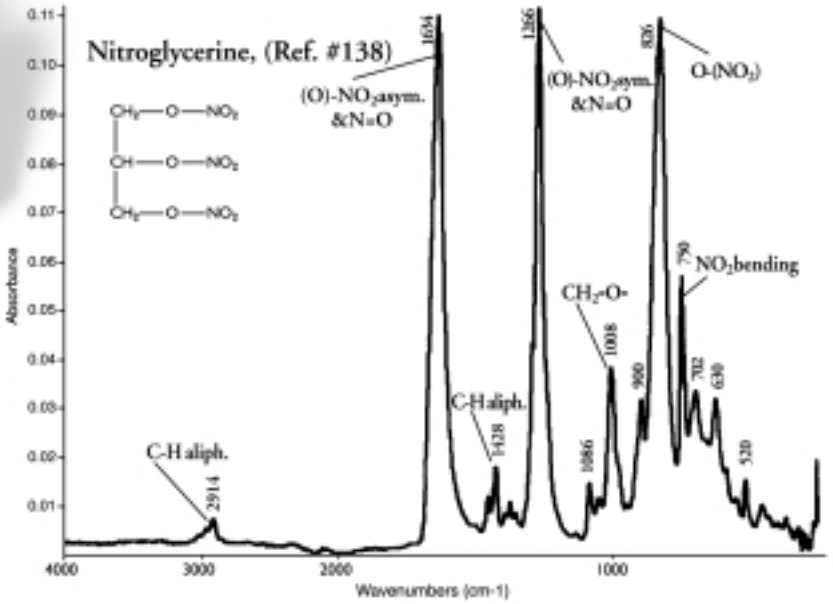
The RAMiTS instrument is currently capable of operating by external or battery power. Because it has quick-charge capability and almost three hours of battery-usage time, RAMiTS is amenable to field use. The instrument has addressed the issues of size, weight, and some of the user interface problems that can occur with the transfer of a benchtop to a field portable instrument. During the past year, ORNL has improved the design and operation of the RAMiTS. Laboratory personnel expect to begin the second evaluation phase in 2002.

■ Portable FT-IR

INFRARED SPECTRAL LIBRARY OF EXPLOSIVES BY ATTENUATED TOTAL REFLECTION

Infrared (IR) spectroscopy with attenuated total reflection (ATR) is an ideal method for analyzing a wide variety of unburned explosive materials and pyrotechnic components. Recent developments in IR/ATR have made analysis fast, convenient, and suitable for field work.

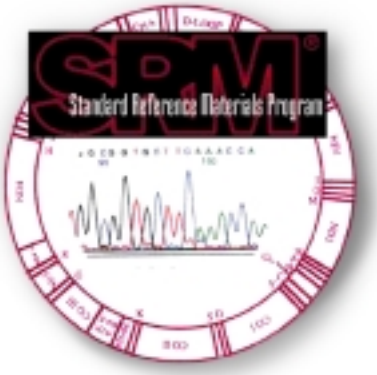
A digital library has been prepared of over 200 ATR spectra of commercial and homemade explosives, explosives components, residue from burned explosives, and several solvents and materials associated with explosives. Use of this library with portable instruments will permit initial identification of potentially explosive materials in the field. The digital library is also well-suited for further studies in the laboratory because it provides extended range data from 4000 cm^{-1} down to 260 cm^{-1}. A hard copy collection of the ATR spectra, complete with chemical structure and characteristic frequency assignments, is being finalized.



■ IR/ATR spectrum of nitroglycerine showing the chemical structure and iindicating IR frequency assignments.

SEQUENCING THE MITOCHONDRIAL GENOME OF HUMAN CELL LINE HL-60

Since June 1996, forensic specimens that do not lend themselves to successful nuclear DNA analysis have been identified at the Laboratory by mitochondrial DNA (mtDNA) sequence information. Many precautions are taken during the mtDNA analysis process to minimize contamination and ensure the accuracy of the sequence obtained. These include the use of a positive, known control DNA template in the amplification and sequencing steps of the procedure.



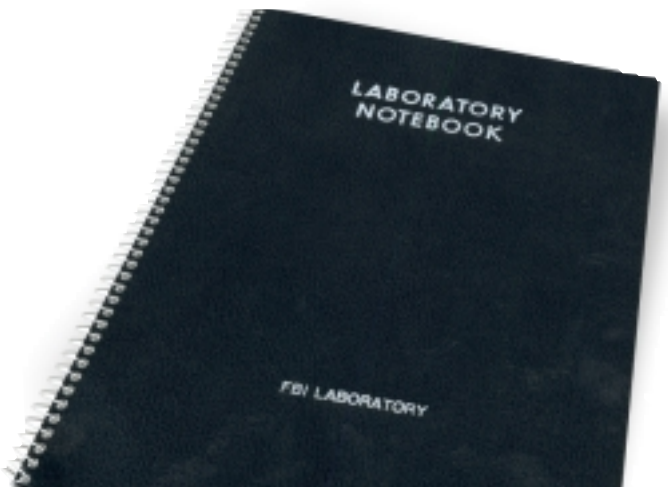
■ The circular human mtDNA containing 16,569 bp and a representative sequence electropherogram.

The Forensic Science Research Unit's effort to amplify and sequence the mitochondrial genome of HL-60 is part of an interlaboratory evaluation of HL-60 so that this cell line's DNA may be included in the National Institutes of Standards and Technology's human mtDNA standard reference material, (SRM) 3392.

QUANTITATION OF HUMAN DNA FOR FORENSIC ANALYSIS

Human forensic DNA analysis is a time-consuming and labor-intensive process. Since many of the methods utilized in this analysis require hands-on attention by a skilled technician, one focus of the research at the Forensic Science Research Unit is to streamline the protocols for forensic DNA analysis. Recent scientific and technological advances can be applied to the methods used in forensic DNA analysis. One example of this is in the DNA quantitation step.

The current method of quantitation utilizes a slot blot hybridization procedure to estimate the amount of DNA in an extract. Recently, an alternate DNA quantitation assay, the AluQuant™ Human DNA Quantitation System (Promega Corporation, Madison, Wisconsin), has been developed. This new system could increase case throughput by decreasing the amount of hands-on time spent on DNA quantitation. In addition, it offers an objective means for determining DNA quantity and is amenable to automation.



DONALD M. KERR'S TENURE

Before his recent departure as Director of the FBI Laboratory to become the Deputy Director for Science and Technology at the Central Intelligence Agency, Donald M. Kerr led the Laboratory through a series of remarkable changes.

In mid-October 1997, when Dr. Kerr returned to government service after occupying a senior executive position in private industry, the FBI Laboratory was under fire from several quarters. Two weeks before Dr. Kerr's arrival, the FBI's outgoing Deputy Director had ordered the Latent Fingerprint Section transferred from the Laboratory to another division. One of Dr. Kerr's first acts was to retain the Latent Fingerprint Section in the Laboratory.

A then-recent report by the Inspector General for the U. S. Department of Justice was critical of many of the FBI Laboratory's customs and practices. Pressure was intense for the Laboratory to apply for ASCLD/LAB accreditation. Before the end of the year, Dr. Kerr had submitted the accreditation application. During the next year, all of the recommendations in the Inspector General's report were implemented, and in September 1998, the Laboratory received its ASCLD/LAB certificate of accreditation.

Dr. Kerr embarked on a series of reforms resulting in an FBI Laboratory that is fundamentally different from the organization he found four years ago. His tenure was marked by an expansive sense of how science and technology can support the FBI's investigative mission by collaborating with law enforcement agencies worldwide. He understood how to tap the technical resources of other federal agencies, especially in the defense and intelligence sectors.

The Engineering Research Facility (ERF) in Quantico, Virginia, was transferred to the Laboratory in 1999 to be under Dr. Kerr's leadership and direction. The addition of ERF's 400 employees, primarily engineers, increased the Laboratory's staff to about 1,100. The ERF is at the core of the Investigative Technology Branch which provides FBI field offices with engineering and technical support for computer-based evidence, cryptography, radio and wireless technology, and data and audio intercepts. A series of organizational realignments resulted in consolidation of the Laboratory's forensic and technical support functions so that today the Laboratory is more oriented toward client needs than ever before.

Dr. Kerr embarked on a series of reforms resulting in an FBI Laboratory that is fundamentally different from the organization he found four years ago.

The *Communications Assistance for Law Enforcement Act (CALEA)* clarifies and further defines telecommunications carriers' statutory obligation to assist law enforcement in executing electronic surveillance. Effective June 12, 2000, the FBI's *CALEA* Implementation Section was transferred to the Laboratory. This transfer facilitates the exchange of electronic surveillance information among the FBI, the law enforcement community, and the telecommunications industry.

The Operational Support Branch was formed by consolidating the Laboratory's functions that respond to field operations in major cases (e.g., crisis response, hazardous materials, evidence collection) and that provide specialized evidence examinations, photography support to the field, and support for prosecutions (e.g., trial exhibits and models). During such international cases as the discovery of mass graves in Kosovo, the bombing of the USS Cole in Yemen, and embassy bombings in Tanzania and Kenya, Dr. Kerr ensured that the Laboratory responded quickly to crime scenes and aided subsequent investigations.

Just prior to his departure, Dr. Kerr's request for a Technical Support Center was approved for construction next to the ERF in Quantico, Virginia. When completed, the Technical Support Center will further expand the Laboratory's capabilities to support technically demanding FBI investigations and field operations.

Design work was completed in 1998 for a new Laboratory building at the FBI Academy, Quantico, Virginia. The 463,000-square-foot facility is scheduled to be completed and occupied in summer of 2002. The Forensic Analysis Branch, which covers the forensic disciplines (including DNA, chemistry, firearms/toolmarks, trace evidence, latent prints, materials analysis, and questioned documents as well as forensic science research and development and managing the national DNA databases), will move to the new building, expanding the Branch's technical capabilities while reducing environmental and safety concerns that are inherent in operating a forensic laboratory in Washington, DC.

Dr. Kerr understood the benefits that the FBI Laboratory could bring to the larger forensic and investigative communities by providing forensic training and hosting working groups and symposia in subject areas in which Laboratory personnel have leading roles. In the Laboratory's research and training center at the FBI Academy, Quantico, Virginia, criminalists from national, state, and local laboratories are trained in basic and advanced methods of forensic analysis. The Laboratory also sponsors an annual symposium on management development which is attended by national forensic laboratory directors. International conferences are hosted on topics of interest to the forensic community.

Building on the success of the FBI Laboratory's development of consensus standards for DNA testing through the Scientific Working Group on DNA Analysis Methods, Dr. Kerr established eight more Scientific Working Groups in areas ranging from firearms/toolmarks, materials analysis, and computer/digital evidence to image/photographic analysis. He also established Validation Review Teams to bolster the scientific foundation for analysis of fingerprints, firearms/toolmarks, and questioned documents. These disciplines, though long accepted by courts, were not originally subjected to the validation process required for newer forensic techniques such as DNA testing and instrument-based chemical analysis.

In an era of *Daubert* challenges to forensic science, Dr. Kerr urged the Laboratory to work with the forensic community to bolster the scientific basis for expert testimony in disciplines that rely on the comparison of such evidence as fingerprints, firearms, questioned documents, and hair. In *United States v. Mitchell*, testimony by an FBI Validation Review Team on fingerprint identification provided grounds for the judge to rule favorably on the scientific basis for fingerprint analysis. This approach in *Mitchell* serves as a model for defending against *Daubert* in other forensic disciplines.

The Laboratory plays an active role in the Nation's response capability against weapons of mass destruction. The Laboratory's weapons of mass destruction program works closely with the U.S. Departments of Defense, Energy, Agriculture, and Health and Human Services to render the incident scene safe so that potential threatening materials can be detected, collected, and analyzed.

Under Dr. Kerr's direction, the premier issue of *Forensic Science Communications* was published in April 1999. *Forensic Science Communications* is a forensic science journal published quarterly on the Internet by Laboratory personnel. He was also instrumental in having the *Handbook of Forensic Services* (formerly the *Handbook of Forensic Sciences*) rewritten. The *Handbook* is available in three formats: as a pocket-sized book, on CD-ROM, and on the FBI Internet site at www.fbi.gov/hq/lab/handbook/intro.htm

Dr. Kerr obtained congressional funding to establish Regional Computer Forensics Laboratories to assist other law enforcement agencies in their investigations of computer-based crime. He arranged for the appointment of a Laboratory scientist to work at the Lawrence Livermore National Laboratory in Livermore, California, to conduct forensic research in a scientific and technical environment unavailable to forensic laboratories.

By applying foresight and perseverance during his tenure, Dr. Kerr focused the FBI's scientific and engineering capabilities in the Laboratory to coordinate its technical and management expertise to support Bureau investigations and operations. The groundwork laid by Dr. Kerr will hold the FBI Laboratory in good stead for years to come while providing the means for adapting constantly changing technology for fighting crime and meeting technical challenges encountered in criminal investigations.

FORENSIC SCIENCE COMMUNICATIONS

Forensic Science Communications (FSC) is a forensic science journal published quarterly on the Internet by FBI Laboratory personnel. This journal is a means of communication among forensic scientists, permitting information of value and interest to be rapidly disseminated among scientists and other interested persons.

Submissions to *FSC* may include letters to the editor, review articles, research papers or feature articles, technical articles, book reviews, and technical notes or case reports.

Manuscripts and other information relating to the journal should be sent to:

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